

COLUMBIA RIVER REGIONAL FORUM TECHNICAL MANAGEMENT TEAM

May 9, 2007 Meeting

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Harkless

Notes: Erin Halton

The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.

Meeting Minutes

With no additional comments, the facilitator's notes and official meeting minutes from the 4/25 and 4/27 conference calls were finalized. Additional changes were made to the 5/2 facilitator's notes:

- During discussions of the sturgeon pulse operation, it was clarified that the request to the COE to model two scenarios (standard and alternative) was requested by Jason Flory of USFWS.
- Under Dworshak operations discussions, the salmon managers requested the project continue at full load for another week. Also, the target elevation was about 1590', and the average April-July volume forecast was based on the May 1 ESP forecast, 1952 kaf.
- Under Operations Review, Priest Rapids, McNary and Lower Granite were monthly average flows. Also, Hungry Horse was operating as such until May final (not end of May) forecasts were made available.

The 5/2 facilitator notes were finalized with incorporation of these comments. The official meeting minutes from the 5/2 meeting will be finalized at the next TMT face to face meeting.

Priest Rapids Operations Update

Russell Langshaw, Grant County PUD, updated TMT on Priest Rapids operations; he referred to a graph posted to the TMT agenda, showing one excursion (.04 kcfs) of the flow band over the last week. Russell noted there are three weekends left of the current protection operation.

Action/Next Steps: Langshaw will provide another update on the flow protection operation at the 5/23 TMT meeting.

Sturgeon Pulse / Libby Operations

Jason Flory, USFWS, said that alternative options for the implementation of a sturgeon pulse operation continued to be considered by the Sturgeon Recovery Team but that shifting the pulse was off the table and that a draft SOR was being developed that would include criteria for triggering the start date for the pulse, rather than a firm start date. The pulse itself would follow a pattern of 20 kcfs for the first four days, 25 kcfs for 14 days, 20 kcfs for 3 days, and 15 kcfs until the volume was exhausted. He added that one goal is to avoid a double peak.

Action/Next Steps: After some discussion it was determined that TMT will revisit the issue after having a chance to review the SOR. Jason committed to sending a draft to TMT through the COE by Friday, 5/11 (*The SOR was sent on 5/11 and posted to the TMT web page) after the Libby BiOp policy team had a chance to review it. TMT scheduled a conference call on Monday, to discuss and give feedback to the Kootenai Surgeon Recovery Team, who will make the final decision about the operation. (It was noted they meet every Tuesday). Greg Hoffman, COE, will be included in discussions with the TMT.

Spring Creek Hatchery Release Report

Dave Wills, USFWS, referred TMT to three graphs linked to the TMT agenda, showing data for hatchery releases in March, April and May 2007. He noted that the numbers for the May releases looked good and that continued studies and discussion would take place about what happened with the high mortality rates in March and April. One theory is that fish size and condition of the gate wells were factors.

Updated Flow Forecasts

Cindy Henriksen, COE, referred TMT to inflow whiskers plots and STP/ESP hydrographs for Libby, Dworshak and Hungry Horse, updated as of 5/8 and posted on the TMT website. The COE requested feedback on the usefulness of the two formats of the information. TMT members commented that while both types of graphs are useful and reveal unique aspects of the information, the whiskers plot graph was easier to read. Henriksen noted that the Dworshak April-July volume forecast continued to show a downward trend. Forecasts show that about 4-8 kcfs/day would be available until the end of June refill at Dworshak, less than what is being put out currently. John Roache, BOR, said that inflows were increasing earlier than expected at Hungry Horse, with a peak expected in the next two weeks, followed by a decline. He said that based on the current ESP inflows, the estimated Hungry Horse elevation would be within 15' from full by the end of May.

Action/Next Steps: TMT requested outflows forecasts for Dworshak to be included along with all the other graphs as the season continues, to show available volume until end of June refill at the project. Flow forecasts will be on the agenda at upcoming TMT meetings.

Snake River Transportation Operations

Paul Wagner, NOAA, said that transport at Lower Granite started today (5/9), and that Lower Monumental transport would begin on May 11.

Russ Kiefer, ID, shared concern that with low flows in the Snake system expecting to continue, conditions for fish would continue to deteriorate through May, and that this might require reconsideration of the planned spill operations in late May. An SOR proposing maximizing transport in late May might be put forth, depending on conditions and if there was agreement from the salmon managers at FPAC. Russ requested that, given the ongoing court process, the COE share this potential request with their policy folks and legal counsel, and work to getting approval in place to implement an operation that deviates from the 2007 Spill Operations Agreement. The COE noted their

appreciation for the heads up and said it would be helpful if parties to the Agreement signed on to any request that gets submitted.

Action/Next Steps: Conditions in the Snake River will be monitored closely, and discussions will continue amongst the salmon managers. Snake River spill/transportation will also continue to be discussed at TMT.

Spill Operations / Night Spill at Little Goose / SOR 2007-06

Paul Wagner, NOAA, presented an SOR on behalf of the Salmon Managers, which requested more timely response from the COE with regard to spill once TDG levels drop below the exceedance criteria, and to spill as close to the gas cap as possible particularly where there are fish passing a project. Wagner acknowledged the many factors and obligations, both court-ordered and for water quality, that the COE is required to meet. The COE agreed that they should (and try to) push to the limit with respect to all their requirements.

Action/Next Steps: The COE will spill as close to the gas caps as possible and will speed up response time whenever possible. The COE will be sensitive to the migration of the fish, and will focus on these projects and monitor progress of fish movement. It was noted that the next sensitive project is John Day.

McNary June Spill Shift

Bernard Klatte, COE, informed TMT members of a Walla Walla District recommendation for transducers installment at McNary spillbay 22, which will be used for a vertical distribution study, and the need to shift spill for 6-8 hours to bays 1-11. The recommendation was to do this installment in the interim between spring and summer research at the project, between June 19th and 21st.

Action/Next Steps: Bernard will join the next FPOM meeting and they will discuss the recommendation and respond to the COE. The results of that discussion and the planned operation will be shared with TMT during their 5/16 conference call.

April 13 ESP HYSSR Model Results

Cindy Henriksen, COE, referred to the 'as of May 7' ESP HYSSR modeling results document linked to the TMT agenda, showing flow objectives for the Columbia River system. John Roache noted that the Grand Coulee elevation target based on the latest The Dalles forecast for August 31 should be 1278' instead of 1280'. Henriksen added that the forecasted start of the sturgeon pulse flows for Libby will likely shift as conditions progress. Priest Rapids met its monthly flow objectives for May and June. Lower Granite met its objective 13 of 44 times for May, 10 of 44 times for June, and did not meet its objectives for July and August. McNary met its objectives 17 of 44 times in May, 33 of 44 in June, and 42 of 44 in July. The take home message was that flows are expected to be limited in the summer, and will require close monitoring and decision-making about how to best shape the flows.

Action/Next Steps: Per requests, the COE will confirm Lower Granite forecasted flows shown in this model run, compared to the April 19 model run and share them with Paul Wagner, NOAA, and look into generating a Lower Granite whiskers plot for future TMT meetings.

Dworshak Operations

Cindy Henriksen, COE, referred TMT to graphs linked to the TMT agenda that showed additional technical information/modeling for Dworshak including daily outflows, end of month elevations, and ESP volumes. She said that the end of May flood control target elevation was 1595', and that the project was operating at full load and at the request of the salmon managers would continue until the next week.

Next Steps: The COE will keep TMT updated as the operation progresses, and Dworshak Operations will be on the agenda for the 5/16 TMT meeting.

Chum Emergence

Two graphs were linked to the TMT agenda, with one showing a dramatic drop in chum emergence and the other showing 1999-2007 compared timing of chum emergence. Paul Wagner, NOAA, said that chum emergence was expected to end around 5/20.

Action/Next Steps: Chum emergence will be on the 5/23 TMT meeting agenda.

Water Management Plan Spring/Summer Update

Bernard Klatte, COE, said that the update was shared at the 5/3 IT meeting, and that no additional comments were submitted. After including the latest forecasts, the spring/summer update would be finalized and posted to the TMT web page.

Operations Review

Reservoirs – Hungry Horse was at 3540.56', with outflows of 7.6 kcfs and inflows increasing. Grand Coulee was at 1247.8' and preparing to fill; the COE was working on an Initial Control Flow guidance based on The Dalles regulated flow. Libby was at 2388' and filling, with VARQ outflows of 14 kcfs. Dworshak was at 1577' and filling. Weekly averages for Priest Rapids were 171.6 kcfs, McNary 268 kcfs, and Lower Granite 82.5 kcfs.

Fish – Cindy LeFleur, WA, referred TMT to a graph of 2007 expected Spring Chinook daily counts at Bonneville, linked to the agenda. She noted that adult jack numbers looked very strong for this year. Paul Wagner, NOAA, referred to the Fish Passage Center website and noted that juvenile counts at Lower Granite were up on 5/6, and that another peak was expected before the end of the week. He added that passage numbers were also up at McNary and John Day. Russ Kiefer, ID, said that his comments on the Fish Passage Plan and the Water Management Plan included a recommendation to have improved passage estimates (rather than fish passage indices) at Lower Granite and additional monitoring at Little Goose, both to better inform management.

Power – Nothing to report

Water quality – Jim Adams, COE, referred to a graph linked to the TMT agenda, showing TDG exceedances at Lower Monumental, Camas/Washougal and Ice Harbor.

Next face-to-face TMT meeting: May 16th

Agenda items will include:

- McNary Spill Shift
- Dworshak Operations
- Sturgeon Pulse / Libby Operations
- Grand Coulee Flood Control Operations
- Operations Review

**Columbia River Regional Forum
Technical Management Team Meeting
May 9, 2007**

1. Welcome and Introductions

Today's TMT meeting was chaired by Cindy Henriksen and facilitated by Robin Harkless, with representatives from NOAA, BPA, COE, BOR, USFWS, Montana, Idaho and Washington attending in person or by phone. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at the meeting. Anyone with questions or comments about these notes should provide them to the TMT chair or bring them to the next meeting.

2. Review Meeting Minutes

There were no comments on either the facilitator's notes or the official minutes for the April 25 and 27 conference calls.

The official minutes for the May 2 meeting were not yet posted as of this meeting. The facilitator's notes for May 2 had just been posted. Cathy Hlebechuk (COE) commented: (1) Under sturgeon pulse operation, clarify that modeling for the Libby pulse was at the request of Jason Flory (USFWS), who asked the COE to model two different scenarios, a standard pulse starting May 25 and an alternate pulse starting June 1. (2) For Dworshak operations, note that the salmon managers requested the project stay at full load for another week. (3) Clarify that 1,952 kaf was the average April-July volume for Dworshak based on the ESP forecast for May 1. John Roache (BOR) commented: Under operations review, the final end of May forecast should be changed to the May final forecast.

3. Priest Rapids Update

The parties to the Hanford Reach Fall Chinook Protection Program Agreement are required to provide a minimum Priest Rapids Outflow of 70 kcfs (USGS gauge) through the end of the Emergence Period. After the Emergence period has ended, Rearing Period protections must be maintained until 400 Temperature Units have accumulated. Historically, Rearing Period flow constraints have ended by mid-June and current projections are for them to end during the week of June 18, 2007.

Priest Rapids Dam had its first exceedance last week, Russell Langshaw (Grant County PUD) said. It was relatively small, 0.4 kcfs. Daily flow bands ranged from 8.8 kcfs to a high of 60.4 kcfs on the weekend. Last weekend was the first of four consecutive weekends where the PUD began using mean minimum flows Monday through Thursday to calculate the weekend flow bands. Last weekend's minimum flows were 156.7 kcfs. Flow bands were all 60 kcfs last

weekend. Langshaw will give another update on the May 23 TMT conference call.

4. Sturgeon Pulse/Libby Operations

As TMT discussed last week, alternatives were being considered to float a coring barge into the upper Kootenai River in July, Jason Flory (USFWS) said. Since then, a number of new options have arisen, including changing the timing and the ordering of the coring and sample sites. None of the options involve using additional flows out of the sturgeon volume to float the barge in July.

Meanwhile, Flory and others are putting together a draft SOR for using the 2007 sturgeon pulse. The approach taken in the 2006 USFWS BiOp for sturgeon and bull trout at Libby was to aim for attributes in the river that are compatible with sturgeon survival and recruitment, rather than prescribing specific operations for the Action Agencies to implement.

Instead of a firm start date, the SOR asks for sturgeon operations to begin when the river reaches 8 degrees Celsius at Bonners Ferry and the reservoir is warm enough to release 20-25 kcfs without decreasing water temperatures more than 1.5 degrees Celsius. For the first 4 days after these conditions take effect, the SOR asks that 20 kcfs to be released, ramping up to 25 kcfs (full powerhouse) for the next 14 days, followed by 3 days of 20 kcfs flows, and finally down to 15 kcfs flows until the sturgeon volume, 1.17 maf this year, is exhausted.

Flory said the SOR is being sent to the Libby BiOp policy group and will be submitted to the TMT soon. He emphasized that it appears we're quickly approaching the conditions outlined in the SOR for beginning the sturgeon pulse. Henriksen asked, will temperatures in the Kootenai River be the primary trigger, and what's the temperature now? Yesterday it was 45.7 degrees Fahrenheit at Bonner's Ferry, Flory said. The reservoir needs to warm up a bit more so when water is released, the river temperatures don't drop. The reason: telemetry data show that spawning females who are beginning to migrate will turn around and swim downstream if the temperature drops by more than 1.5 degrees Celsius (actually 0.8 C). Cindy LeFleur (WDFW) asked, what reservoir temperature are you looking for? Approximately 8 degrees Celsius in the upper layers of the reservoir, Flory said. When flow volumes are approaching 20-25 kcfs, water from below the level of the outlet gate can cause temperature reductions, Brian Marotz (Montana) said. The temperature of the reservoir is currently 43-45 degrees Fahrenheit, or about 7 degrees Celsius.

Hlebechuk asked, is there a drop-dead date, or is it better to wait for it to reach 8 degrees C until an unknown date? We're hoping we can get those conditions in place soon, Flory said. Jim Adams (COE) asked, how do you know at what temperature to pull water out of Libby Reservoir to get to the right temperature at Bonner's Ferry? What would the temperature of outflows at Libby

need to be? That's something Greg Hoffman (COE) at Libby Dam has a good handle on, Flory said. Temperatures at the tailwater gage downstream of Libby Dam have averaged about 40 degrees F, Adams said.

The group discussed the process for initiating the sturgeon pulse this year using the new attribute-based approach. Litchfield favored sticking with the formal protocol of having TMT review an SOR and make recommendations to the Action Agencies, which then decide what to do. The consensus was to follow that process in this case.

Litchfield asked which presents the greatest risk, starting the operation too early and cooling the river too much, or waiting too long for the right temperature. The former, Flory said. Data in recent years show that when the hydrograph dips by even small amounts, sturgeon tend to spawn and migrate immediately back to Kootenay Lake. Conversely, the risk of waiting too long is that lack of flows could cause fish to spawn in unproductive habitat before the sturgeon pulse even begins.

We should be looking at two phases in the sturgeon life cycle, adult migration and incubation/early life survival, Marotz said. Stacked flows should be directed at the migration phase. Data indicate that sturgeon move into position sometime after May 15, which is when stacked flows would be most beneficial. After that, he said, it's important to have a gradual decline from the spring freshet, which will be associated with even higher water temperatures. Thermistors at the dam could be used to monitor temperatures.

Anticipating the SOR submittal, the TMT decided to revisit the sturgeon pulse in a conference call at 11:30 am on Monday, May 14.

5. Spring Creek Hatchery Release

David Wills (USFWS) presented smolt data on the March, April and May releases from Spring Creek Hatchery. Survival for the May release looks very good, unlike the earlier two releases this year. The March release had high mortality, but no signs of physical trauma. The April release showed both high mortality and signs of physical trauma, which implicated the new gateway modifications and vertical barrier screens as a possible cause. The gateway flows are much higher than normal, and when these flows were backed down in April, mortality dropped immediately. We think it's something to do with the size of the fish, Wills said. The March fish were around 60 millimeters, the April fish around 80 millimeters, and the May fish around 90 millimeters – all much smaller than typical summer subyearlings, and probably the smallest fish passing the project. Tony Norris (BPA) asked, what about other hatchery fish released in the Bonneville forebay? Wills doubted any other subyearling fish are released that close to the forebay but said he would look into it.

6. Updated Flow Forecasts

Cindy Henriksen (COE) presented hydrograph and ESP inflow forecasts for Libby, Dworshak and Hungry Horse, updated as of May 8. The first 10 days of both represent a single deterministic inflow forecast, followed by 44 historical weather sequences of temperature and precipitation overlaid on the existing snowpack and soil conditions. She asked TMT whether they wished to continue having these graphs available. Litchfield, Wagner and Wills agreed both the whiskers and spaghetti plots are helpful. Wagner and Wills preferred the whiskers plots. Litchfield said the spaghetti plots show how suddenly some sequences can change from low flows to massive flooding. Henriksen agreed with him that the drawback of whiskers plots is that you can see extremes, but they're not continuous.

At Dworshak, flows are generally in recession, where the water supply is only 70% of average and significantly less than in the Libby basin, Henriksen said. The water supply forecast at Dworshak has been generally going down across the season. The COE water supply forecast has generally been less than the National Weather Service's forecast. Henriksen presented a graph depicting flow augmentation volumes available at Dworshak for the remainder of the season (through June 30). ESP volumes (the 44 traces from the spaghetti plots) show a little more volume available for flow augmentation than the regression equation volume forecast.

Wagner asked, why is less augmentation volume available if the COE water supply forecast is greater than the ESP forecast? The final COE water supply forecast for May is 1.868 maf, which is less than the Weather Service forecast of 2.06 maf, Henriksen said. ESP runoff is almost 2 maf as well, which is why the flow augmentation volume on the ESP graph is a little greater than what's shown on the regression graph. The regression forecast was based on COE, not the Weather Service forecast. The flow augmentation volume at Dworshak is 450 kcfs plus or minus 200 kcfs.

The minimum and maximum ESP augmentation volumes are 255 kaf and 677 kaf through the end of June, or approximately 2,000 kcfs above the minimum flow available for augmentation, based on minimum volume, Hlebechuk said. Based on maximum volume, the flow augmentation volume available from now through June 30 is about 6 kcfs above the minimum flow of 1 kcfs needed for flow augmentation. At present, the system is releasing full powerhouse, 10 kcfs, so the water volume is being used faster than it's being replenished. There was consensus that this rate of use is not sustainable. The issue was discussed at FPAC on May 8, and the expectation was to maintain 10 kcfs discharge for the next week, Wagner said. By the end of the week, fish in the Snake River should finish their journey and be in place at all the projects. The plan then is to look at water volumes available going forward, and probably reduce Dworshak outflows at the May 16 TMT meeting.

If all the flow augmentation available is released in a flat outflow from now until the end of June, that flat outflow would be 4 - 8 kcfs, based on ESP volumes, Henriksen said. Russ Kiefer (Idaho) expressed appreciation for this estimate of the outflows Dworshak could provide on a daily basis and still refill by the end of June. He requested that similar information be provided at future TMT meetings.

Inflows are rising at Hungry Horse, Roache said. Yesterday, flows were approximately 10 kcfs, but BOR is waiting to see how high they go before making new decisions about discharges. Normally, the peak would occur around June 1, but Roache said he wouldn't be surprised if this year the peak occurs within the next few weeks. Based on the latest ESP information, the reservoir will be within 15 feet from full by the end of May. Discharges might need to be reduced next week, he said, especially if the hydrograph indicates a decline in the water supply. He and Wagner agreed the peak this year will probably come a couple of weeks early, especially with temperatures in the 70s and 80s expected in the next few weeks.

The May final forecast for Hungry Horse was 78% of normal, Roache said.

7. Snake River Transportation Update

Transportation was scheduled to start at Little Goose no later than 8 days after the initiation of transportation at Lower Granite, Wagner said. That meant collection started yesterday and transportation today. Lower Monumental will be next. The greatest effort in the early season is to keep as many fish in the river as possible.

This year, conditions aren't great, and flow is low, which prior years have shown not to be a problem if it happens early in the season. Temperatures were cool, a rise in flows was projected, and a number of fish moved past the projects. However, it's fading fast, Wagner said. The peak of 95 KCFS dropped to yesterday's lull of 66 KCFS. There's quite a difference between the top and the bottom of the Snake River system that is giving the salmon managers concern, Wagner said. Weather forecasts and the current status of snowpack in the basin raise concerns that sometime in late May, conditions in the Snake River will deteriorate significantly, Kiefer said. In past years, he has seen temperatures climb and flows decline rapidly. He proposed that TMT begin working now to establish flexibility so that, if FPAC unanimously recommends, legal approvals are already in place to shut off voluntary spill at Lower Granite and Little Goose and maximize transportation at those sites. A delay of several days seeking legal approval to deviate from the planned 2007 operations could harm listed fish, Kiefer said. Such an operational change would require unanimous FPAC approval; if the parties disagree, FPAC would not be able to recommend a change of operations. Margaret Filardo (FPC) and Tom Lorz (CRITFC) noted that

FPAC has made no specific recommendations yet regarding transportation. The issue discussed was the ability to change operations quickly if conditions warrant.

Henriksen asked whether FPAC includes representation by the same sovereigns and agencies represented at TMT. Kiefer said yes, including tribal representation. Robyn MacKay asked, does that include the same Tribes that signed the 2007 agreement, and have they been notified? All four Tribes would have to sign the SOR for it move forward, Lorz said.

Lead time is the best way to make the process work better for those changes that we perceive as different from expected operations, Henriksen said. There was consensus that legal consultation would be necessary to change operations. The COE will inform their legal staff of this development.

8. Spill Operations/Nighttime Spill to Cap at Little Goose (SOR #2007-06)

Wagner presented this SOR, which says spill amounts for fish passage are sometimes below criteria and asks the COE to respond more quickly to spill criteria in ways that benefit fish passage. He cited as example the situation last week at Lower Monumental, where spill had been reduced from 27 to 13 kcfs because of forebay issues at Ice Harbor, and fish were stacking up in the Lower Monumental forebay. The same thing happened at Little Goose the prior week, he said. Nighttime spill has not reached the gas cap since the 14 days of night spill to the cap began on April 29, as called for in the 2007 operations agreement.

COE set the spill cap at 30.4 kcfs at Little Goose, Adams said, but is actually getting 29.4 kcfs or a little less because of the gate openings on the spillway. He asked, is the concern over the way gas caps are being set or the way they're being implemented? Wagner and Lorz advocated pushing the limit of 120% in the tailrace harder when there are large numbers of fish moving in a low-flow year. Lorz asked whether the spill caps are determined by SYSTDG modeling. Partly; it's one of the tools the COE uses, Henriksen said. Lorz said his understanding of the operations agreement was that COE would spill to the gas caps set at monitoring sites, not spill cap estimates set by modeling. Wagner agreed a discussion of this would be timely.

Adams described the process he and Laura Hamilton (COE) go through each morning to set spill caps for the day. He invited any interested TMT members to schedule a visit to observe the process. The discussion turned to spill cap problems at John Day and Camas Washougal, where TDG levels from higher spill at night to the spill cap arrive at the downstream dam during the warmest part of the following afternoon, tending to cause exceedances. Adams pointed out that this is not a problem in the Snake, where projects are spaced farther apart, allowing 2-3 days' travel time for the peak to flatten out.

Wagner asked, what the COE's response was when fish were stacking up in the Little Goose forebay? We agreed to increase spill for 4 hours on Wednesday night, which caused TDG levels at the Little Goose tailrace to exceed 120%, but the 12-hour average didn't exceed 120%, Henriksen said. The continuing concern is that these higher TDG amounts move downstream and cause an exceedance of 115% TDG in the Lower Monumental forebay. As an example of the COE's commitment to the goal of passing as many fish as possible, the next day the COE increased the spill cap at Little Goose from 13 kcfs to 21 kcfs.

Adams and Henriksen expressed appreciation for the feedback from the salmon managers on which projects they believe are functioning well in terms of spill volumes and caps (Lower Granite, Ice Harbor, McNary and The Dalles) as well as projects at which spill is an issue (Little Goose, Lower Monumental, John Day). There was general consensus that spilling as close to the gas cap as possible is highly desirable, particularly during fish passage season, while recognizing the multiple obligations the Action Agencies have to fulfill. Robin Harkless advised the TMT representatives to keep in close communication with each other regarding this issue.

9. McNary June Spill Shift

The COE has received a request from the Walla Walla district biologist Ann Setter to replace the hydroacoustic split beam transducers on spill bay 22, where TSW #1 is installed at McNary, Bernard Klatte (COE) said. The transducers are needed to collect data for a vertical distribution study, so the COE is requesting that 40% of spill be shifted to bays 1 through 11 for 6-8 hours sometime between June 19 and June 21. Kiefer asked, is that a period of low fish movement? Klatte said he thought so. Try to pick a low migration period because that spill pattern is not so good for fish, Kiefer said. Lorz and Wills both expressed a desire to study the smolt data before offering an opinion of the date. Those TMT members present requested that Klatte run this operation past FPOM on Thursday and report back to TMT at the May 14 conference call.

10. Updated ESP HYSSR Model Runs

Henriksen presented some overall Columbia River system scenarios based on ESP HYSSR analysis of April 30 inflows. The purpose of ESP HYSSR modeling is to capture the big picture in potential scenarios of operations and results for a particular water year in a monthly time step. The overall goal is to meet BiOp operations at projects all over the basin in a monthly time step and use this output as a filter to examine some years more closely if desired.

Henriksen presented input assumptions for Dworshak, Hungry Horse, Brownlee, Libby and Grand Coulee. At Libby, for example, in each case, the sturgeon pulse was assumed to begin May 25 and the project was assumed to

operate at full powerhouse until the sturgeon volume for the water year was depleted. The results provide a sense of how well the sturgeon flow and reservoir refill might be met in 2007, Henriksen said. The message is, we need to figure out as we move through time how best to shape the augmentation volumes available.

The 135 kcfs flow objective at Priest Rapids was met in all 44 scenarios modeled for May and June. The outlook for Lower Granite was not so good – only 13 years of the 44 that were modeled met the flow objective of 85 kcfs in May. Wagner asked, given that the April 19 data showed May average flow of 91 kcfs at Lower Granite; the April 30 data showed May average of 82 kcfs. He asked, did the volume forecast really decrease as much as the HYSSR graph implies? That could be another reason to set the stage for a flexible process if conditions in the river deteriorate to the point where in-river migration is undesirable, Litchfield and Wagner agreed.

Kiefer said he would appreciate a presentation on inflows at Lower Granite, like the box whiskers and spaghetti plots the COE has been preparing for Libby, Dworshak and Hungry Horse. Henriksen said she would find out what the COE technical staff could provide.

11. Dworshak Operations

Henriksen presented graphs of Dworshak outflows, end of month elevations and ESP volumes. The message is that 10 kcfs can continue to be released for a few more days, then outflows would be reduced throughout May and June, she said. This information indicates that outflows would drop to the minimum flow of 1.5 kcfs by the end of June. Henriksen asked did the salmon managers want to continue operating at full powerhouse? Through Tuesday, Wills said. TMT will revisit this issue next week.

12. Chum Emergence

It appears Hamilton Springs may be contributing to an increase of 142 fish caught last week, Wagner said. The numbers dropped to 6 the following week. Chum emergence will probably continue for another week or two, he said. TMT agreed to check back on this issue biweekly until chum emergence ends.

13. Water Management Plan Spring/Summer Update

The COE addressed all comments received, and on May 3 submitted the spring/summer update to the IT for review. No further comments have been received. NOAA, USFWS, BOR, BPA, Montana, Idaho, and Washington representatives agreed that – once Hlebechuk has revised the WMP spring/summer update to incorporate the latest forecast information – it will be considered finished, and this item can be dropped from future TMT agendas.

14. Operations Review

A. Reservoirs. Grand Coulee is at elevation 1,247.8 feet and will probably start filling over the next week or two, Roache said.

Hungry Horse is at elevation 3,540 feet, releasing 7.6 kcfs. The reservoir is filling, with inflows averaging around 10-11 kcfs and forecasted to be 13-14 kcfs or more over the next few days.

Libby is at elevation 2,388.89 feet and filling. VARQ flows have been adjusted to 14 kcfs while the COE awaits input from the sturgeon recovery team, Henriksen said.

Dworshak is at elevation 1,577 feet, releasing full powerhouse. Priest Rapids flows were 171.6 kcfs last week.

McNary has a seasonal average of 271 kcfs. Lower Granite has been discharging 54 kcfs; average flows have been almost 60 kcfs since April 13.

B. Fish. Yesterday's adult count was 2,900 Cindy LeFleur (WDFW) said. WDFW reviews its run forecasts daily. There are already almost 6,000 spring Chinook jacks (3 year old fish) at Bonneville Dam, which is more than the final jack counts for 20 out of the past 30 years, she said.

A participant asked, what percentage of Bonneville spring Chinook pass Lower Granite? Probably 50-60% of the run, LeFleur said. This year's forecast for spring Chinook is 78,500, with 38,500 just in the Snake, or about 49% of the run. Formerly, 50-60% of the run was in the Snake.

Juvenile passage numbers for yearling Chinook at Lower Granite are following a disturbing trend, dropping suddenly from 220,000 to 94,000, Wagner said. This trend reflects the flows in the river. Another peak flow is expected this Sunday, which is badly needed for fish passage, he said. Juvenile passage has picked up in the lower river. Passage numbers of 224,000 at McNary and 155,000 at John Day indicate that migration is fully under way.

Steelhead have been following a similar trend to spring Chinook yearlings at Lower Granite. The passage numbers are higher at Little Goose for juvenile steelhead than for yearling Chinook. Numbers are picking up at McNary and John Day, but not to the extent observed for yearling Chinook. We're approaching the 50% typical passage point in the migration season, Wagner said. Given the sharp drop in juvenile passage numbers, he wondered whether this year will be reasonably reflective of that.

For the sake of more informed management, a method is needed to estimate actual fish passage at Lower Granite instead of relying on index counts, Kiefer said. From the late '70s to the early '90s, index counts gave a good indication of actual runs, but RSWs, which pass proportionately more fish for the water spilled, have made index counts potentially inaccurate.

C. Power. There is nothing new to report, Robyn MacKay (BPA) said.

D. Water Quality. Yesterday there were a number of exceedances at Lower Monumental forebay and tailwater, as well as at Ice Harbor, Camas Washougal, and The Dalles forebays, Jim Adams (COE) said. Spill caps might need to be adjusted because of high TDG levels in the lower Snake River.

15. Next TMT Meeting

Conference calls were scheduled for Monday, May 14, at 11:30 am, to discuss the sturgeon pulse SOR, and for the two following Wednesdays, May 16 and 23. The next face-to-face meeting will be on May 30, 2007.

Agenda items for the Wednesday, May 16, conference call will include, McNary spill shift, the sturgeon pulse, Libby operations, Dworshak operations, Grand Coulee flood control operations, and the usual operations review. This meeting summary was prepared by consultant and writer Pat Vivian.

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Cathy Hlebechuk	COE
Jim Adams	COE
Cindy Henriksen	COE
Paul Wagner	NOAA
Robyn MacKay	BPA
Tony Norris	BPA
Jim Litchfield	Montana
Richelle Beck	D. Rohr & Assoc.
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Russell Langshaw	Grant Co. PUD
Russ Kiefer	Idaho
Dave Benner	FPC